REMARKS

Claim 1 has been amended to include the word "comprising" which was inadvertently omitted due to a typographical error. This amendment does not change the scope of the claim. The applicant respectfully requests that the amendment to claim 1 be entered.

Comments of the applicant are preceded by related comments of the examiner in small, bold-faced type:

> **7. Reference to claim 1, Elwalid teaches a computer-implemented method of managing bandwidth (abstract):**
>
> **receiving packets on an input port (Fig. 1, numeral 102 and 103 - 109, col. 3, line 59 - col. 4, line 44; the routers and destinations receive packets from the source);**
>
> **classifying received packets in a classification engine (Fig. 2, numeral 210 and 102, col. 4, line 45 - col. 5, line 3).**
>
> **processing the classified packets in a processing system according to their classifications (Fig. 2, numeral 204, col. 4, line 45 - col. 5, line 31), including selecting processing from a group consisting of at least two of (col. 4, line 45 - 48; the router employ a round-robin scheduling method) :**
>
> **session bandwidth packet processing (col. 5, line 32 - 6; link utilization, link capacity in user),**
>
> **rate shaping packet processing, and**
>
> **admission control packet processing (col. 5, lines 3 - 31, PATH, RESV, UDATE and TEAR-DOWN messages are control messages identified by packet classifier), and**
>
> **type of service (TOS) packet processing (col. 5, lines 3 - 31; controller processes each control message based on message type to determine how to process the control message to establish, maintain or tear-down connection); and**
>
> **queuing packets in a queuing engine (Fig.2, numeral 214, col. 4, line 45-col. 5, line 31).**
>
> **Note: the applicant claims at least two of the processing and the reference teaches all of the processing except rate shaping packet processing.**

The applicant disagrees that Elwalid discloses or suggests the limitation of "selecting processing from a group consisting of at least two of session bandwidth packet processing, rate shaping packet processing, admission control packet processing, and type of service (TOS) packet processing."

The applicant has previously argued that the cited reference does not disclose or suggest the recited "selecting process" feature of claim 1. The examiner responded to this argument as follows:

> **43. • It is argued in regards to claim 1 that no of the references teach, "selecting processing form a group of two or more of the recited members". The Examiner disagrees. Elwalid teaches employing a round-robin scheduling method (see col. 5, line 20-23 and col. 4, line 45-48). Round robin is nothing is a sequential, cyclical allocation of resources to more than one process or device (see Microsoft Computer dictionary, Fifth Edition), which meets the argued limitations of selecting the**

processing from a group of two or more.

As a first matter, the "round-robin" aspect cited in the office action relates to the round-robin scheduling method with adaptive weighting assignment:

> FIG. 2 shows a block diagram of a processing section 200 of a router, such as routers 103-105, employing a round-robin scheduling method with adaptive weighting assignment in accordance with the present invention. (Elwalid, col. 4, lines 45-48).
>
> The scheduler 206 also allocates processing capacity of controller 202 with a round-robin scheduling method with adaptive weighting assignment in accordance with the present invention. (Elwalid, col. 5, lines 20-23).

Elwalid makes clear that the round-robin aspect of the scheduling method relates specifically to the processing of ***different types of control messages*** based on link utilization:

> "Round-robin" may be defined as switching the processing by the controller between the classes (i.e., switching the message processing) in a predetermined, cyclic order. (Elwalid, col. 6, lines 31-34).
>
> Weights may change as link utilization and average message size changes. With defined weights adaptively defined, the processing section then processes each message class in a cyclic, "round-robin" fashion. (Elwalid, Abstract).

The "round-robin" aspect of the scheduling method does not meet the "selecting processing [from] a group of two or more [processing methods]" as asserted in the office action.

As a second matter, Elwalid does not disclose or suggest ***any*** selection of processing from a group of at least two processing methods, or otherwise.

Elwalid discloses techniques implemented by a router for processing control messages in a packet network that employs a reservation-based protocol, such as Reservation Setup Protocol (RSVP). (Elwalid, col. 3, lines 10-12, lines 64-67). There are four types of control messages that can be sent through the packet network: PATH message, UPDATE message, RESV message, and TEAR-DOWN message. (Elwalid, col. 1, line 36 – col. 2, line 9). Control messages received by the router are stored in an input queue. (Elwalid, col. 4, lines 66-67). ***In different implementations of the router,*** the scheduler processes the control messages in accordance with one of three scheduling methods: a first-in-first-out (FIFO) method, a round-robin scheduling method with fixed weight assignment, or a round-robin scheduling method with

adaptive weight assignment. (Elwalid, col. 5, line 65 – col. 7, line 5). ***There is no teaching or suggestion of a selection between the scheduling methods.***

FIG. 3 of Elwalid shows a flow chart of an algorithm for implementing the round-robin scheduling method with adaptive weighting assignment employed by a scheduler of a router:

> Referring to FIG. 3, first, at step 301, the scheduler algorithm determines whether weights for the classes should be updated. If so, the scheduler algorithm moves to step 310; otherwise, the scheduler algorithm moves to step 302 using, for example, weights for the assigned classes previously determined in step 311 (described subsequently). This test of step 301 may be employed in a manner such that the weight assignment method adaptively changes the weights over a reasonably short time, but also occurs relatively infrequently so as to not burden the controller or other processor of processing section 200.
>
> If, at step 301, the scheduler determines that the weights should be updated, then, at step 310, link utilization measurements are retrieved for the link or links, the individual classes of each link, and/or, if employed, the super-classes of the links. Next, at step 311, the weights are calculated in a manner similar to that of the exemplary calculations of equations (1)-(4), and then the algorithm moves from step 311 to step 302.
>
> At step 302 the scheduler algorithm determines processing capacity allocated to processing messages for each of the assigned classes (e.g., PATH & RESV, UPDATE, and TEAR-DOWN messages) based on the corresponding weights. Then, the scheduler algorithm moves to step 303 to process messages of the first class.
>
> At step 303, the processing section processes messages of the first class in the receive queue 220 for a portion of allocated processing capacity based on the calculated weight for the first class. For example, PATH and RESV messages may be processed. The allocated portion may be a portion of the total processing capacity as measured in, for example, processor cycles, time, number of packets, or other measure of processing as known in the art. Once the allocated portion is exhausted, the scheduler algorithm moves to step 304.
>
> At step 304, the processing section processes messages of the second class in the receive queue 220 for a portion of allocated processing capacity based on the calculated weight for the second class. For example, UPDATE messages may be processed. Once the allocated portion is exhausted, the scheduler algorithm moves to step 305.
>
> At step 305, the processing section processes messages of the third class in the receive queue 220 for a portion of allocated processing capacity based on the calculated weight for the third class. For example, TEAR-DOWN messages may be processed. Once the allocated portion is exhausted, the scheduler algorithm moves to step 306.
>
> At step 306, once the messages of the last class (e.g., TEAR-DOWN messages) are processed, the algorithm processes other messages or performs other types of

> packet network processing during the remaining portion of allocated processing capacity. Then, when the remaining portion is exhausted, the scheduling algorithm returns from step 306 to step 301. (Elwalid, col. 9, line 31- col. 10, line 16).

What is important to note from the above-quoted paragraphs of Elwalid is that there is ***only one*** type of processing that occurs at the router in accordance with the round-robin scheduling method with adaptive weight assignment that is being employed by the router's scheduler. There is no selection between different types of processing, much less "selecting processing from a group consisting of at least two of session bandwidth packet processing, rate shaping packet processing, admission control packet processing, and type of service (TOS) packet processing" as in claim 1. The portions of Elwalid that were cited by the examiner as allegedly teaching the "session bandwidth packet processing, ... admission control packet processing, and type of service (TOS) packet processing" of claim 1 are ***non-optional*** steps of the single type of processing represented by the algorithm of FIG. 3. Even if the cited portions of Elwalid are construed to teach the "session bandwidth packet processing, ... admission control packet processing, and type of service (TOS) packet processing" of claim 1 (which the applicant does not concede), the ***non-optional*** steps teach away from the "selecting processing" feature of claim 1.

As a third matter, the examiner asserts that Elwalid discloses the "type of service (TOS) packet processing" of claim 1 at col. 5, lines 3-31. These cited portions of Elwalid disclose techniques that are performed when a router uses a ***reservation-based approach*** to reserve network resources. As Elwalid makes clear in col. 1, lines 18-35, the ***reservation-based approach is different from the type of service approach*** that may be employed by a router within a network. Elwalid does not teach or suggest modifying the techniques associated with the reservation-based approach to include the techniques associated with the type of service approach. The applicant submits that Elwalid does not disclose "processing the classified packets in a processing system according to their classifications, including selecting processing from a group consisting of at least two of session bandwidth packet processing, rate shaping packet processing, admission control packet processing, and ***type of service (TOS) packet processing***," as in claim 1.

For at least these reasons, the applicant submits that claim 1 is in condition for allowance.

The foregoing remarks also apply to independent claim 26, which has corresponding limitations.

Dependent claims 9, 12, and 15 recite individually aspects of the "rate shaping packet processing," "session bandwidth packet processing," and "admission control packet processing," respectively. The examiner relies on Engel to provide the "rate shaping packet processing" aspects of claim 9; relies on Lyles to provide the "session bandwidth packet processing" aspects of claim 12; and relies on Carter to provide the "admission control packet processing" aspects of claim 15. The applicant does not agree that there is any suggestion to combine the references in the manner suggested by the examiner. Moreover, none of the cited references includes any suggestion of the "selecting processing" feature of claim 1.

All of the dependent claims are patentable for at least the same reasons as the claims from which they depend.

The applicant acknowledges the examiner's indication that claim 10 contains allowable subject matter.

The applicant respectfully requests consideration of the references cited in the March 7, 2002 Information Disclosure Statement and consideration of the Torsten Braun reference cited in the February 25, 2005 Information Disclosure Statement, and return of the initialed PTO 1449 forms to the undersigned attorney. The examiner declined to consider the Torsten Braun reference indicating that the article was not provided. A search of Private PAIR indicates that the Torsten Braun reference was received by the USPTO and scanned into the Image File Wrapper for this application. Only two pages of the Torsten Braun reference have been submitted by the applicant. These two pages are the only portions of the Torsten Braun reference that were considered by the foreign patent office to be relevant as indicated in the communication from the foreign patent office. No other pages of the Torsten Braun reference were provided to the applicant by the foreign patent office.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or

concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons supporting patentability that have not been expressed. Finally, nothing in this paper should be construed as conceding any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily concede that the claim was unpatentable prior to its amendment.

Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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